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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/605,001

08/29/2003

Barry Sandrew

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2000

36067

7590

09/09/2008

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EXAMINER

KAU, STEVEN Y

ART UNIT

PAPER NUMBER

2625

MAIL DATE

DELIVERY MODE

09/09/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/605,001	SANDREW, BARRY	
	<b>Examiner</b>	<b>Art Unit</b>	
	STEVEN KAU	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment was received on 5/22/2008, and has been entered and made of record. Claims 12-14 has been cancelled. Currently, claims 1-11 are pending.

### ***Response to Remark/Arguments***

2. Applicant's arguments with respect to claims 1-14 have been fully considered but are not persuasive. The responses to applicant's arguments are addressed as follows:

With regard to Section "**Claim Rejection under 35 U.S.C. §112**" (Page 2-3, Remarks/Arguments)

Applicant argues, "The Examiner has further rejected pending claims 1-11 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant claims as the invention. Particularly, the Examiner states, 'Applicant does not disclose what are the base color function(s), injection color function(s) and what do these functions performing; and what are the range limits of 'first luminance range' and 'second luminance value' in the disclosure. It is unclear what does applicant refer to 'selecting at least one injection color function for said region', 'selecting at least one injection color function for said region' and how large or small the 'luminance range' in his claim for patentability protection.'

Examiner has further rejected dependent claims 2-11 on the same basis. Applicant

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respectfully disagrees with the Examiner that the 'what these functions perform' is not disclosed in the applicant. In regard to 'base color function,' the Applicant refers the Examiner to at least the following citations in the publication: abstract, Figure 4 (including base color functions space 401), Figure 5 (including base color functions space 401), Figure 6 and 7, paragraphs 0011, 0031, and 0038-0041. In regard to the term 'injection color function,' the Applicant refers the Examiner to at least the following citations in the publication: Figure 4, 5 and 6 (including injection color function space 400), paragraphs 0011, and 0031-0040. In regard to the range limit(s) for luminance range, Applicant refers Examiner to at least the following citation in the application: paragraphs 0030, 0032, 0034, and 0038."

In re, the examiner respectfully disagrees with applicant's arguments for the following reasons:

1. Applicant mentioned "base color function(s)", "injection color function(s)", "alpha function" and "pattern function(s)" in the disclosure. For example, "base color function" is mentioned in multiple places such in Abstract, Figures 6 and 7, Paragraphs 0011 and 0031-0040, and Figures 4 and 5 define base color function space and injection color function space, which contain some functions such as subtractive function 403, alpha function 404 and pattern function 405. However, applicant does not define what is a "base color function", an "injection color function", an "alpha function" and a "pattern function" in the disclosure. For example, clarification of the correlation and identification of what structure, material, or acts set forth in the specification would be capable of carrying out a function recited in claim limitation is not found in the specification. In addition, one of ordinary skill in the art understands that a color function, for instance, a

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base color function, is not the same as a color space, for instance, base color function space. A color function and a color space could be related to each other but they are two different things. For example, a color space could be a mathematic color model provided with coordinates and color dimensions, and could include multiple color functions for carrying out color manipulation. A color function could be a mathematic function which could be used to produce a useful result for color manipulation.

2. Applicant mentions "luminance range" in multiple places, such in paragraphs 0030, 0032, 0034 and 0038. However, applicant does not define how wide a range does "luminance range" cover in the disclosure.
3. As the claim limitations of "base color function", "injection color function", "alpha function", "first luminance range", and "second luminance range" argued by Applicant, has not been sufficiently provided with description or definition to clearly define the metes and bounds of limitation of such; and further, Examiner has also not able to find any explicit and deliberate disclosure relating to the limitation, which will constitute as a definition for properly limiting the scope of such a broad limitation (as the claim may be read in light of specification though the limitations must not be read into the claims). Thus, Examiner respectfully submits that until such a broad limitation to be limited with properly definition, a broad limitation of such, must subjected to broadest reasonable interpretation.

With regard to Sections **"Claim Rejection under 35 U.S.C. §102(b)"** and **"Claim Rejection under 35 U.S.C. §103(a)"** (Page 3-4, Remarks/Arguments)

Applicant argues, **"Within each region, there is a one-to-one mapping between gray-scale values to hue in Sandrew '915. While novel for its time, the method of 'colorizing' taught in Sandrew '915, is over a decade old. The method of the present invention is a non-obvious advancement over Sandrew '915 because it teaches applying at least one color injection function using at least one pattern function mixed with at least one base color function to each pixel in the region of the image to be enhanced. Thus, embodiments of the invention enable one-to-many mapping of luminance or gray-scale to color as per paragraph 9 for example. In addition, this process is described in detail in the application, at least in Figures 6 and 7, and various paragraphs including paragraph 41. Sandrew '915 does not teach applying an injection color function or using a pattern function as described in the present invention. Further, the present invention associates a first luminance value with a first luminance range with the base color function, and a second luminance value and second luminance range with the injection color function, as further described in at least paragraphs 0030-0032. Sandrew '915 does not teach use using multiple color spaces for injection and base colors with each color space extending for a range of luminance values. The use of such innovations of the present invention greatly improves the result of the colorization process, producing the most realistic colorization to date."**

In re, as discussed above, the claim limitations of "base color function", "injection color function", "alpha function", "first luminance range", and "second luminance range" argued by Applicant, has not been sufficiently provided with description or definition to clearly define the metes and bounds of limitation of such; and further, Examiner has also not able to find any explicit and deliberate disclosure relating to the limitation, which will constitute as a definition for properly limiting the scope of such a broad limitation (as the claim may be read in light of specification though the limitations must not be read

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into the claims). Thus, Examiner respectfully submits that until such a broad limitation to be limited with properly definition, a broad limitation of such, must subjected to broadest reasonable interpretation. The Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited references are reasonably and properly meeting the claimed limitations.

With respect to claim 1, limitations recite, **"selecting at least one base color function for a region of an image; selecting at least one injection color function for said region; associating a first luminance value and a first luminance range with said at least one base color function; associating a second luminance value and a second luminance range with said at least one injection color function; selecting at least one pattern function for said at least one injection color function; and, applying said at least one injection color function using said at least one pattern function mixed with said at least one base color function to said region of said image for each luminance value within said region."** Sandrew' 915 reference reads all claim limitations as discussed in the claim rejection in the previous office action and there are no changes in the examiner position since the examiner believes that the cited references are reasonably and properly meeting the claimed limitations.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The examiner also references the applicant to the claims rejection section below for the explanation on how the prior art references read on the amended claims.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to Claims 1-11, recites, “In a computer system, a method of enhancing an image comprising: selecting at least one base color function for a region of an image; selecting at least one injection color function for said region; associating a first luminance value and a first luminance range with said at least one base color function; associating a second luminance value and a second luminance range with said at least one injection color function; selecting at least one pattern function for said at least one injection color function; and, applying said at least one injection color function using said at least one pattern function mixed with said at least one base color function to said region of said image for each luminance value within said region” (emphasis added by the examiner). Applicant does not define what are the base color function(s), injection color function(s), alpha function and pattern function, and first and second luminance range such that clarification of the correlation and identification of what structure, material, or acts set forth in the specification would be capable of carrying out a function recited in the claim limitation. And there is no range limits of “first luminance range” and “second luminance value” in the disclosure. It is unclear what does applicant refer to “selecting at least one injection color function for said region”,



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“selecting at least one injection color function for said region” and how large or small the “luminance range” in his claim for patentability protection.

Claims 2-11 are dependent claims to Claim 1, and are rejected for the same reasons discussed above.

In light of the disclosure, the examiner interprets "base color function" as defined base color, or primary color, or additive color like Red, Green and Blue color, etc.; "injection color function" as another defined base color, or subtractive color like Cyan, Magenta, yellow and black color, etc.; and "luminance range" as any reasonable luminance value range in the application prosecution.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sandrew (US 5,534,915).

Regarding claim 1.

Sandrew' 915 discloses a method of enhancing an image comprising: selecting at least one base color function for a region of an image (**e.g. selecting a base color, Fig. 1, col 3, lines 19-23**); selecting at least one injection color function for said region (**e.g. selecting an additional base color to achieve “multibending” effect in a**

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**particular region, col 3, lines 45-61**); associating a first luminance value and a first luminance range with said at least one base color function (**e.g. adjust the luminance value, Fig. 2, col 4, lines 28-41**); associating a second luminance value and a second luminance range with said at least one injection color function (**e.g. update luminance and display new luminance, Fig. 8, col 4, line 41 to col 5, line 7**); selecting at least one pattern function (**i.e. key frame or a look-up table, Fig. 4**) for said at least one injection color function (**col 1, lines 24-53, col 2, lines 26-35 and col 3, lines 29-37**); and, applying said at least one injection color function using said at least one pattern function mixed (**e.g. multiblending**) with said at least one base color function to said region of said image for each luminance value within said region (**Fig. 10, col 3, line 18 through col 4, line 40 and col 5, lines 23-67**).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandrew (US 5,534,915) as applied to claim 1 above, and in view of Prater (US 5,867,169)

Regarding claim 2.

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Sandrew' 915 differs from claim 2, in that he does not expressly disclose wherein selecting an arithmetic mode for said at least one injection color function.

Prater' 168 teaches that selecting an arithmetic mode for said at least one injection color function {**e.g. complement of one of the primary colors**} (**col 3, lines 51-62 and col 18, lines 14-30**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sandrew' 915 to include selecting an arithmetic mode for said at least one injection color function taught by Prater' 168 to provide user to select the appropriate color (**col 6, lines 21-44**).

Regarding claim 3.

Sandrew' 915 differs from claim 3, in that he does not expressly disclose wherein said arithmetic mode is set to pass unaltered said at least one injection color function.

Prater teaches that said arithmetic mode is set to pass unaltered said at least one injection color function (**col 5, lines 43-60**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sandrew' 915 to include said arithmetic mode is set to pass unaltered said at least one injection color function taught by Prater' 168 to provide user to select the appropriate color (col 6, lines 21-44).

Regarding claim 4.

Sandrew' 915 differs from claim 4, in that he does not expressly disclose wherein said arithmetic mode is set to yield a color complement of said at least one injection color function at said second luminance value.

Prater teaches that said arithmetic mode is set to yield a color complement of said at least one injection color function at said second luminance value (col 5, lines 43-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sandrew' 915 to include said arithmetic mode is set to yield a color complement of said at least one injection color function at said second luminance value taught by Prater' 168 to provide user to select the appropriate color (col 6, lines 21-44).

9. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandrew (US 5,534,915) as applied to claim 1 above, and in view of Hamburg (US 7,136,075).

Regarding claim 5.

Sandrew' 915 differs from claim 3, in that he does not expressly disclose wherein selecting an alpha function for said at least one injection color function.

Hamburg '075 teaches selecting an alpha function for said at least one injection color function {e.g. opacity} (**Figure 2, Table 2, col 7, lines 21-30**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sandrew' 915 to include selecting an alpha function for said at least one injection color function taught by Hamburg' 075 to determine proper opacity for compositing graphic elements (col 3, lines 35-67 & col 1, lines 1-17).

Regarding to claims 6, 7 & 8.

Sandrew' 915 differs from the claims, in that he does not teach said alpha function.

Hamburg teaches that said alpha function returns a constant (**col 1, lines 29-35**); said alpha function returns a random value within a range (**col 1, lines 29-35**), and said alpha function returns a random value outside a range (**Figure 2, col 8, lines 29-46**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sandrew' 915 to include said alpha function returns a constant; returns a random value within a range, and returns a random value outside a range taught by Hamburg to determine proper opacity for compositing graphic elements (col 3, lines 35-67 & col 1, lines 1-17).

10. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandrew (US 5,534,915) in view of Knoll (US 6,606,166).

With regard to claims 9, 10 & 11, Sandrew' 915 differs from the claims, in that he does not teach said pattern function returns an assertion for injection that is random.

Knoll' 166 teaches that said pattern function returns an assertion for injection that is random {**e.g. the number of candidate colors generated for each target pixel can vary; and the system can select one of the candidate color independent of the target pixel location, such as randomly**} (**col 7, lines 42-51**); said pattern function returns an assertion for injection that repeats a pattern (**col 4, lines 5-17**), and said

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pattern function returns an assertion for injection that utilizes a texture map (**Figure 4, col 4, lines 38-54**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Sandrew' 915 to include said pattern function returns an assertion for injection that is random; said pattern function returns an assertion for injection that repeats a pattern and said pattern function returns an assertion for injection that utilizes a texture map taught by Knoll' 166 to allow target palette to have arbitrary structure and to avoid neighborhood effects of other target pixels (col 1, lines 64-67 & col 2, lines 1-10).

### ***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on Monday to Friday, from 8:30 am -5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Steven Kau/  
Examiner, Art Unit 2625  
9/4/2008

/King Y. Poon/  
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